

ABSTRACT OF THE DISCLOSURE

An electrodialysis method and apparatus include a source of concentrate fluid, a source of dilute fluid, a collector of treated concentrate fluid, a collector of dilute fluid, an anode and a cathode. A plurality of generally planar spacers are interleaved with a plurality of membranes to define a plurality of cells providing electrically conductive fluid connection between the anode and the cathode. Each of the spacers comprises a gasket that defines a first aperture and a second aperture. Each of said first and second apertures define an independent cell between interleaved membranes. The symmetrical, multiple split cell spacer configuration channels fluid flow through two or more narrow and elongated paths. The split cell arrangement allows for operation of the stack in parallel or in series. The invention improves the ion removal efficiency of a given membrane area, requires significantly less energy than other electrodialysis systems and substantially reduces stack assembly, materials and fabrication costs.